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FILE 'HOME' ENTERED AT 14:42:32 ON 12 MAY 2004

=> index biosci
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                    0.21        0.21

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS,
       BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT,
       CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS, DDFB, DDFU,
       DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:42:47 ON 12 MAY 2004

69 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> s thymosin (w) beta
          5   FILE ADISCTI
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          2   FILE AQUASCI
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          6   FILE DDFB
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         57   FILE DRUGU
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          4   FILE EMBAL
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          5   FILE FEDRIP
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         42   FILE IFIPAT
         19   FILE JICST-EPLUS
          1   FILE KOSMET
        120   FILE LIFESCI
        364   FILE MEDLINE
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          6   FILE USPAT2
          6   FILE VETU
         44   FILE WPIDS
          1   FILE WPIFV
         44   FILE WPINDEX

  48 FILES HAVE ONE OR MORE ANSWERS,   69 FILES SEARCHED IN STNINDEX

L1   QUE THYMOSIN (W) BETA

=> log h
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                    1.14        1.35

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:44:02 ON 12 MAY 2004

* * * * * * RECONNECTED TO STN INTERNATIONAL * * * * * *
SESSION RESUMED IN STNINDEX
INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS,
BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS,
CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS, DDFB, DDFU, DGENE, DRUGB,
DRUGMONOG2, IMSDRUGNEWS, DRUGU, IMSRESEARCH, EMBAL, EMBASE, ESBIOBASE, FEDRIP,
FOMAD, FOREGE, FROSTI, FSTA, GENBANK, HEALSAFE, IFIPAT, IMSPRODUCT, JICST-EPLUS,
KOSMET, LIFESCI, MEDICONF, MEDLINE, NIOSHTIC, NTIS, NUTRACEUT, OCEAN, PASCAL,
PCTGEN, PHAR, PHARMAML, PHIC, PHIN, PROMT, RDISCLOSURE, SCISEARCH, SYNTHLINE,
TOXCENTER, USPATFULL, USPAT2, VETB, VETU, WPIDS, WPIFV, WPINDEX'
AT 14:44:53 ON 12 MAY 2004
CHARGED TO COST=

COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                    1.14        1.35

=> file biosis
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                    1.14        1.35

FILE 'BIOSIS' ENTERED AT 14:45:03 ON 12 MAY 2004
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.
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RECORDS LAST ADDED: 6 May 2004 (20040506/ED)

FILE RELOADED: 19 October 2003.

=> s thymosin (w) beta (w) 4
2132 THYMOSIN
635358 BETA
1885726 4
L2 381 THYMOSIN (W) BETA (W) 4

=> d l2 kwic 1-5

L2 ANSWER 1 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***Thymosin*** ***beta*** ***4*** stimulates laminin-5 production independent of TGF-beta.
AB ***Thymosin*** ***beta*** ***4*** (Tbeta4) stimulates epithelial cell migration and promotes laminin-5 (LM-5) expression. Using gene expression analysis with human corneal epithelial cells treated. . .
IT . . .
IT Parts, Structures, & Systems of Organisms
corneal epithelial cells: sensory system
IT Chemicals & Biochemicals
laminin-5: expression, production, synthesis; ***thymosin*** ***beta*** ***4*** ; transforming growth factor-beta
RN 77642-24-1 ( ***thymosin*** ***beta*** ***4*** )

L2 ANSWER 2 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . platelets and/or MKs, such as P-selectin, platelet factor 4 and its variants, the glycoproteins of the Ib-IX-V and IIb-IIIa complexes, ***thymosin*** ***beta*** ***4*** , neurogranin, and clusterin were the most abundant transcripts, confirming the adequacy of our experiment procedures and the validity of the. . .
GEN. . . Ib-IX-V gene (Hominidae): expression, regulation; human neurogranin gene (Hominidae): expression, regulation; human platelet factor 4 gene (Hominidae): expression, regulation; human ***thymosin*** ***beta*** ***4*** gene (Hominidae): expression, regulation

L2 ANSWER 3 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
c-Fos; c-Jun; green fluorescent protein; mRNA [messenger RNA]; mitogen-activated protein kinase [EC 2.7.1.37]; plasminogen activator inhibitor 1: extracellular expression, synthesis; ***thymosin*** ***beta*** - ***4***
RN 142243-02-5 (mitogen-activated protein kinase)
9026-43-1 (mitogen-activated protein kinase)
142243-02-5 (EC 2.7.1.37)
9026-43-1 (EC 2.7.1.37)
140208-23-7 (plasminogen activator inhibitor 1)
77642-24-1 ( ***thymosin*** ***beta*** - ***4*** )

L2 ANSWER 4 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
Molecular Genetics (Biochemistry and Molecular Biophysics); Reproductive System (Reproduction)
IT Diseases
uterine adenomyosis: reproductive system disease/female
IT Chemicals & Biochemicals
***thymosin*** ***beta*** ***4*** : gene expression
RN 77642-24-1 ( ***thymosin*** ***beta*** ***4*** )

L2 ANSWER 5 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
follicle stem cells: integumentary system, activation; keratinocytes: integumentary system
IT Chemicals & Biochemicals
matrix metalloproteinase 2 [EC 3.4.24.24]: production, secretion; ***thymosin*** - ***beta*** - ***4*** : expression
RN 146480-35-5 (matrix metalloproteinase 2)
146480-35-5 (EC 3.4.24.24)
77642-24-1 ( ***thymosin*** - ***beta*** - ***4*** )

=> d l2 kwic 45-55

L2 ANSWER 45 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
macrophage colony stimulating factor [M-CSF]; osteopontin: regulation; protease; receptor activator of nuclear factor-kappa B ligand [RANKL]; thioredoxin binding protein: regulation; ***thymosin*** ***beta*** - ***4*** : regulation; total RNA

L2 ANSWER 46 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***Thymosin*** ***beta*** ***4*** promotes corneal wound healing and decreases inflammation in vivo following alkali injury.
AB Previously, ***thymosin*** ***beta*** ***4*** (Tbeta4) was found to promote wound healing in full thickness skin wounds and heptanol debrided corneas. Here, the effect of. . .
IT . . .
macrophage inflammatory protein-1-alpha: chemokine, regulation; macrophage inflammatory protein-1-beta: chemokine, regulation; macrophage inflammatory protein-2: chemokine, regulation; monocyte chemoattractant protein-1: chemokine, regulation; ***thymosin*** ***beta*** ***4*** : ophthalmic-drug, pharmacodynamics, topical administration

L2 ANSWER 47 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
Organisms
blood platelets: blood and lymphatics; thrombocytes: blood and lymphatics
IT Chemicals & Biochemicals
actin; collagen; factor XIIIa [transglutaminase]; fibrin; ***thymosin*** ***beta*** - ***4***

L2 ANSWER 48 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
IT Parts, Structures, & Systems of Organisms
cytoskeleton, organization; malignant fibrosarcoma cell, metastases, motility
IT Chemicals & Biochemicals
F-actin; G-actin; ***thymosin*** - ***beta*** - ***4*** cDNA; ***thymosin*** - ***beta*** - ***4*** : upregulation

GEN mouse ***thymosin*** - ***beta*** - ***4*** gene (Muridae)

L2 ANSWER 49 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
IT Chemicals & Biochemicals
DNase I; F-actin; G-actin; actin- ***thymosin*** ***beta*** - ***4*** complex: cross-linked; gelsolin; gelsolin-2-actin complex; phalloidin; ***thymosin*** ***beta*** - ***4***
IT Methods & Equipment
Intas gel scanner: Intas, laboratory equipment; Philips 420 microscope: Philips, laboratory equipment; actin- ***thymosin*** ***beta*** - ***4*** complex purification: Extraction, Isolation, Purification and
Separation Techniques, purification method; difference map analysis: Molecular Biology Techniques and Chemical Characterization, evaluation. . .

L2 ANSWER 50 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
of Organisms
tumor cells, pathological structure
IT Diseases
cancer: neoplastic disease
Neoplasms (MeSH)
IT Chemicals & Biochemicals
RhoC; fibronectin; p53; retinoblastoma; ***thymosin*** ***beta*** - ***4***

L2 ANSWER 51 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
Biology
IT Parts, Structures, & Systems of Organisms
actin filament; heart fibroblast; lamellipodium
IT Chemicals & Biochemicals
actin; cofilin; profilin; ***thymosin*** ***beta*** - ***4***

L2 ANSWER 52 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
Structures, & Systems of Organisms
aortic valve interstitial cell: circulatory system
IT Chemicals & Biochemicals
integrin; matrix metalloproteinase-2; tenascin C; ***thymosin*** - ***beta*** - ***4***

L2 ANSWER 53 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
GEN human CXCR-4 gene (Hominidae): expression; human ***thymosin*** ***beta*** - ***4*** gene (Hominidae): expression

L2 ANSWER 54 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
IT Parts, Structures, & Systems of Organisms
skeletal muscle: muscular system
IT Chemicals & Biochemicals
actin; profilin; profilin ternary complex; ***thymosin*** ***beta*** - ***4***

L2 ANSWER 55 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . .
Circulation)
IT Parts, Structures, & Systems of Organisms
chorioallantoic membrane: embryonic structure
IT Chemicals & Biochemicals
parathymosin-alpha; prothymosin-alpha; thymosin-alpha; thymosin-beta-10; ***thymosin*** - ***beta*** - ***4*** ; thymosin-beta-9

=> d l2 kwic 300-310

L2 ANSWER 300 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI RAPID ISOLATION OF ***THYMOSIN*** ***BETA*** - ***4*** FROM HUMAN THYMUS BY RP-HPLC.

L2 ANSWER 301 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***THYMOSIN*** ***BETA*** - ***4*** IS EXPRESSED IN ROS 17-2.8 OSTEOSARCOMA CELLS IN A REGULATED MANNER.
AB. . . cell lines ROS 17/2.8 and ROS 25/1 was used to identify genes whose expression is associated with the osteoblast phenotype. ***Thymosin*** . ***beta*** . ***4*** cDNA was cloned from an ROS 17/2.8 complementary DNA library on the basis of its differential hybridization with radiolabeled cDNA prepared from ROS 17/2.8 and ROS 25/1 cells. Northern blot analysis confirmed that ***thymosin*** . ***beta*** . ***4*** , hitherto a putative immunodulatory hormone, was indeed differentially expressed. Steady state mRNA levels were severalfold higher in ROS 17/2.8 cells exhibiting an osteoblast-like phenotype, compared with the less osteoblast-like ROS 25/1. ***Thymosin*** . ***beta*** . ***4*** transcripts were also detected in rat UMR 106 osteosarcoma cells and in intact neonatal and fetal rat calvaria. Sequence analysis of the cDNA indicated that ***thymosin*** . ***beta*** . ***4*** transcripts may arise by processing at a more distal polyadenylation signal. Treatment of ROS 17/2.8 cells with dexamethasone increased, while addition of 1,25-dihydroxyvitamin D3 decreased ***thymosin*** . ***beta*** . ***4*** mRNA. The phenotype-dependent expression in the ROS cells and the response to steroid hormone suggest that ***thymosin*** . ***beta*** . ***4*** expression contributes to the osteoblast phenotype.

L2 ANSWER 302 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . GnRH agonist treatment. No consistent increases in splenic weight or bone marrow cell counts were observed. Thymosin alpha-1 but not ***thymosin*** ***beta*** - ***4*** increased in GnRH agonist-treated rats. Thymic weight correlated negatively with ovarian and uterine weights, relative adrenal weight, serum estradiol, LH, . . .
IT Miscellaneous Descriptors
ADRENAL OVARY GONADOTROPIN RELEASING HORMONE DNA ESTRADIOL LUTEINIZING HORMONE ***THYMOSIN*** ***BETA*** - ***4***

L2 ANSWER 303 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . bone marrow. Partial DNA sequence analysis suggested that B9 was a novel sequence not previously identified. C9 was identified as ***thymosin*** . ***beta*** .- ***4*** , and C15 showed extensive homology to lactotransferrin. Thus, screening a bone marrow cDNA library by differential hybridization has successfully yielded. . .

L2 ANSWER 304 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI MODULATION OF THYMOSIN ALPHA-1 AND ***THYMOSIN*** ***BETA*** - ***4*** LEVELS AND PERIPHERAL BLOOD MONONUCLEAR CELL SUBSETS DURING EXPERIMENTAL RHINOVIRUS COLDS.
AB. . . day 3 and a significant rise on day 5 ($p < .001$). There was also a significant rise in serum ***thymosin*** . ***beta*** . ***4*** levels on day 5 ($p < .001$). Serum cortisol rose in parallel with thymosin .alpha.1 on day 5 after rhinovirus. . .

L2 ANSWER 305 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI RELATIONSHIP OF ***THYMOSIN*** ***BETA*** - ***4*** DURING PUBERAL DEVELOPMENT IN BOARS AND GILTS IMMUNIZED AGAINST ESTRONE.

L2 ANSWER 306 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . investigated. Using an in vitro antigen (Ag)-specific macrophage-dependent T-cell proliferation system, we found that both thymosin alpha 1 (T.alpha.1) and ***thymosin*** ***beta*** ***4*** (T.beta.4) augment the Ag-presenting capacity of macrophages. Macrophage monolayers were pulsed with keyhole limpet hemocyanin (KLH) in the absence or. . .

L2 ANSWER 307 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***THYMOSIN*** - ***BETA*** - ***4*** GENE PRELIMINARY CHARACTERIZATION AND EXPRESSION IN TISSUES THYMIC CELLS AND LYMPHOCYTES.
AB A cDNA for rat ***thymosin*** -. ***beta*** . ***4*** was used to investigate the expression of this gene in different tissues, thymic cells, and lymphocytes. Hybridization analysis of total. . . all the tissues surveyed, with the highest levels in spleen, thymus, and lung. Examination of thymic cells showed that the ***thymosin*** -. ***beta*** . ***4*** gene is predominantly expressed in thymocytes. The ***thymosin*** -. ***beta*** . ***4*** mRNA was also studied in Ig+ and Ig- lymphocytes, being fourfold more abundant in Ig- than Ig+ splenic lymphocytes, whereas. . . types of blood cells. The analysis of RNA from T cells at different maturation stages evidenced slight differences in their ***thymosin*** -. ***beta*** . ***4*** mRNA content, indicating that ***thymosin*** -. ***beta*** . ***4*** gene expression is not clearly related to the differentiation process of T cells. All these results do not support the roles for ***thymosin*** -. ***beta*** . ***4*** in cellular immunity and differentiation of lymphoid cells, suggesting a more general function for this peptide. Preliminary characterization of the. . .

L2 ANSWER 308 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI SYNTHESIS OF A ***THYMOSIN*** ***BETA*** - ***4*** -LIKE PEPTIDE DEACETYL-THYMOSIN BETA-4X-E-N AND ITS RESTORATIVE EFFECT ON DEPRESSED LYMPHOCYTE BLASTOGENIC RESPONSE TO PHYTOHEMAGGLUTININ PHA IN UREMIC PATIENTS.

L2 ANSWER 309 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . a peptide derivative of thymic tissue, using a well-characterized antiserum. For cell identification, serial sections were stained with antisera to ***thymosin*** . ***beta*** . ***4*** (T.beta.4), another thymic peptide that identified oligodendrocytes, and with anti-glial fibrillary acidic protein (GFAP) antiserum that stains astrocytes in a double-staining. . .

L2 ANSWER 310 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB We have identified a new ***thymosin*** . ***beta*** . ***4*** -like peptide in pork spleen. The new peptide (12 mg) and ***thymosin*** . ***beta*** . ***4*** (33 mg) were isolated from 230 g of spleen by solid phase extraction, preparative isoelectric focusing, and HPLC. The new. . . .beta.9 is the substitution of leucine by methionine at position 6. This peptide replaces thymosin .beta.10 which is the minor ***thymosin*** . ***beta*** . ***4*** -like peptide in most mammals, e.g., in man, rat, mouse, cat, and rabbit. The structure was determined by amino acid analysis, tryptic digestion, and carboxypeptidase digestion. Pork spleen contains 192 .mu.g of ***thymosin*** . ***beta*** . ***4*** and 117 .mu.g of thymosin .beta.9Met per gram of tissue.

=> d l2 kwic 200-211

L2 ANSWER 200 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . with PMA, F-actin increased to 180% of control levels as measured by RP binding and the actin sequestering complex of G-actin- ***thymosin*** ***BETA*** - ***4*** decreased significantly. To determine whether the F-actin increased required adhesion, we inhibited cell attachment to the substratum by adding RGDS,. . .

L2 ANSWER 201 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Comparison of the inhibitory effect of Seraspenide (AcSDKP), tumor necrosis factor alpha (TNF-alpha), ***thymosin*** ***beta*** - ***4*** , transforming growth factor beta-1 (TGF-beta-1) and macrophage inflammatory molecule 1-alpha (MIP1-alpha) on CD34+ cell growth.
IT Miscellaneous Descriptors
ACETYL-N-SERINE-ASPARTIC ACID-LYSINE-PROLINE; BONE MARROW; BOOK CHAPTER; HEMATOPOIESIS; MACROPHAGE INFLAMMATORY PROTEIN-1-ALPHA; MEETING ABSTRACT; ***THYMOSIN*** - ***BETA*** - ***4*** ; TRANSFORMING GROWTH FACTOR-BETA-1; TUMOR NECROSIS FACTOR-ALPHA

L2 ANSWER 202 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Effects of ***thymosin*** ***beta*** - ***4*** and thymosin beta-10 on actin structures in living cells.
AB. . . The beta-thymosins are a family of small proteins originally isolated from the thymus. Recently, two of the major mammalian isoforms, ***thymosin*** ***beta*** - ***4*** (T-beta-4) and thymosin beta-10 (T-beta-10), are identified as significant actin monomer sequestering proteins which may be involved in regulating actin. . .

L2 ANSWER 203 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Total synthesis of ***Thymosin*** ***beta*** - ***4*** by fragment condensation.

L2 ANSWER 204 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Conformation of ***thymosin*** ***beta*** - ***4*** in water determined by NMR spectroscopy.
AB The conformational preferences of a 43-amino-acid G-actin-binding peptide, ***thymosin*** ***beta*** - ***4*** , in water at 1, 4 and 14 degree C, and at pH 3.0 and 6.5 were studied by NMR. NMR showed that ***thymosin*** ***beta*** - ***4*** lacks a uniquely folded conformation in water. However, some preferential alpha-helical conformations of ***thymosin*** ***beta*** - ***4*** can be

observed in aqueous solutions. The segment at residues 5 - 16 showed characteristic interactions for conformations in both. . .

L2 ANSWER 205 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI G-Actin and ***thymosin*** ***beta*** - ***4*** in chick embryo fibroblasts.

L2 ANSWER 206 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI A novel role for ***thymosin*** ***beta*** - ***4*** : A matrigel induced gene involved in endothelial cell differentiation.

L2 ANSWER 207 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI How profilin promotes actin filament assembly in the presence of ***thymosin*** ***beta*** - ***4*** .

L2 ANSWER 208 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***Thymosin*** ***beta*** ***4*** : A new inhibitory molecule for human hematopoietic progenitors.

L2 ANSWER 209 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI How Profilin Promotes Actin Filament Assembly in the Presence of ***Thymosin*** ***beta*** - ***4*** .
AB. . . made possible by the involvement of the irreversible ATP hydrolysis accompanying actin polymerization. As a consequence, in the presence of ***thymosin*** ***beta*** - ***4*** (T-beta-4), low amounts of profilin promote extensive actin assembly off of the pool of actin-T-beta-4 complex. When barbed ends are. . .

L2 ANSWER 210 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . both proteins were present in elongating parallel fibers in the upper portion of the molecular layer. Later in cerebellar development, ***thymosin*** ***beta*** - ***4*** , but not thymosin beta-10, was
expressed in Golgi epithelial cells and Bergmann processes. ***Thymosin*** ***beta*** - ***4*** was expressed in a small population of cells with microglial morphology scattered throughout the gray and white matter. Thymosin beta-10 was detected in an even smaller population of glia. Expression of ***thymosin*** ***beta*** - ***4*** and thymosin beta-10 in premigratory granule cells and in growing neuronal processes is consistent with the possibility that both beta-thymosins. . .

L2 ANSWER 211 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***Thymosin*** - ***beta*** - ***4*** (T-beta-4) in activated platelets.

=> d his

(FILE 'HOME' ENTERED AT 14:42:32 ON 12 MAY 2004)

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SEA THYMOSIN (W) BETA

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L1 QUE THYMOSIN (W) BETA

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FILE 'BIOSIS' ENTERED AT 14:45:03 ON 12 MAY 2004
L2 381 S THYMOSIN (W) BETA (W) 4

=> s l2 and inhibit
137354 INHIBIT

L3 24 L2 AND INHIBIT

=> d l3 kwic 1-24

L3 ANSWER 1 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . gene expression as a predominant transcript in gut IEL, encodes both a ubiquitous actin-binding protein (UTbeta4) with demonstrated capacity to *inhibit* neutrophilic infiltration, and a splice-variant limited to lymphoid tissue (LTbeta4) with unknown bioactivity. Freshly isolated Vgamma5+ DETCs expressed both forms,. . .
IT . . .
effects; 2, 4-dinitrofluorobenzene: allergic contact dermatitis inducer, skin irritant, thymosine-beta-4 gene splice variant effects; lambda-carrageenan: footpad inflammation inducer, footpad injection, *thymosin* - *beta* - *4* gene splice variant effects
GEN mouse *thymosin* - *beta* - *4* gene (Muridae):
LT-beta-4 lymphoid tissue splice variant encoding, UT-beta-4 actin binding protein encoding, antiinflammatory effects, skin expression, splice variants

L3 ANSWER 2 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . AcSDKP decreased. mBMEC-CM (mw 3-10 kD) had no effect on the formation of CFU-GM. However, mBMEC-CM (mw <3 kD) could *inhibit* the growth of CFU-GM. Tbeta4 (10-11apprx10-7mol/L) and AcSDKP (10-11apprx10-5mol/L) had dose-dependent inhibitory effects on the growth of CFU-GM. Angiotensin converting. . .
IT . . .
lymphatics, immune system; hematopoietic stem cell: blood and lymphatics
IT Chemicals & Biochemicals
AcSDKP: secretion; angiotensin converting enzyme; protease inhibitors; *thymosin* - *beta* - *4* : secretion

L3 ANSWER 3 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . binding cleft. Alternatively, if, as previously postulated, latrunculin A binds in the nucleotide cleft of actin, then its ability to *inhibit* binding by thymosin beta4 is a surprising result that suggests that significant allosteric changes affect the thymosin beta4 binding site.. . .
IT . . .
and Molecular Biophysics; Muscular System (Movement and Support)
IT Chemicals & Biochemicals
actin; actin-binding proteins; latrunculin A: function, structure; profilin; *thymosin* *beta* - *4*

L3 ANSWER 4 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . dynamics ("breathing") of actin monomers. The conformational change may reflect the unique ability of Tbeta4 to sequester actin monomers and *inhibit* nucleotide exchange.
IT Major Concepts
Biochemistry and Molecular Biophysics
IT Chemicals & Biochemicals
actin: conformation, dynamics, monomers; calcium ATP-actin; magnesium ATP-actin; nucleotide: exchange; *thymosin* - *beta* - *4*

L3 ANSWER 5 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* *beta* *4* sulfoxide is an anti-inflammatory agent generated by monocytes in the presence of glucocorticoids.
AB. . . show that thymosin beta4 sulfoxide is generated by monocytes in the presence of glucocorticoids and acts as a signal to *inhibit* an inflammatory response. In vitro, thymosin beta4 sulfoxide inhibited neutrophil chemotaxis, and in vivo, the oxidized peptide, but not the. . .
IT . . .
monocytes: blood and lymphatics, immune system; neutrophil: blood and lymphatics, immune system
IT Chemicals & Biochemicals
G-actin; glucocorticoids; methionine: oxidation; *thymosin* *beta* - *4* sulfoxide: generation

L3 ANSWER 6 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . the transglutaminase reaction, while the third glutaminyl residue (Gln-39) was derivatized with a low efficiency. Labeled derivatives were able to *inhibit* polymerization of G-actin and could be cross-linked to G-actin by 1-ethyl-3-(3-(dimethylamino)propyl)carbodiimide . Fluorescently labeled thymosin beta4 may serve as a useful. . .
IT Major Concepts
Enzymology (Biochemistry and Molecular Biophysics); Cell Biology
IT Chemicals & Biochemicals
G-actin; dansylcadaverine: fluorescent label; *thymosin* *beta* - *4* : cellular events, glutaminyl substrate; transglutaminase

L3 ANSWER 7 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . of approximately 0.5 muM. The resulting profilin II-peptide complex overcomes the combined capacity of thymosin beta4 and profilin II to *inhibit* actin nucleation and restores the extent of filament formation. We do not observe such an effect when barbed filament ends. . .
IT . . .
Parts, Structures, & Systems of Organisms
skeletal muscle: muscular system
IT Chemicals & Biochemicals
actin: nucleation; polyproline; profilin II: dimerization; *thymosin* *Beta* - *4* ; vasodilator stimulated phosphoprotein [VASP]

L3 ANSWER 8 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . sequences of the scallop and sea urchin beta-thymosins are 80% identical to each other, 75% identical to residues 1-40 of *thymosin* *beta* - *4* , and 72-80% identical to residues 1-40 of other vertebrate beta-thymosins. The sea urchin peptide was found to *inhibit* actin polymerization and nucleotide exchange. The affinity of the sea urchin peptide for rabbit muscle actin is apparently lower than that of *thymosin* *beta* - *4* , since about twice the concentration of sea urchin peptide is required to give inhibition of actin polymerization or nucleotide exchange equivalent to *thymosin* *beta* - *4* .

L3 ANSWER 9 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . cells. We have therefore reexamined this issue using highly specific reagents known to sequester actin monomers. Two of these

reagents, *thymosin* *beta* - *4* and DNase I, potently inhibited the sequestration of transferrin receptors into coated pits as measured in a cell-free system using perforated A431 cells. At low concentrations, *thymosin* *beta* - *4* but not DNase I was stimulatory. Importantly, the effects of both reagents were specifically neutralized by the addition of actin. . . where latrunculin A, a drug that sequesters actin monomers, inhibited receptor-mediated endocytosis. Biochemical and morphological analyses suggest that these reagents *inhibit* later events in coated vesicle budding. These results provide new evidence that the actin cytoskeleton is required for receptor-mediated endocytosis. . .

L3 ANSWER 10 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* *beta* - *4* binds actin in an extended conformation and contacts both the barbed and pointed ends.
AB. . . in vivo to maintain a reservoir of unpolymerized actin monomers. In vitro, beta-thymosins form 1:1 complexes with actin monomers and *inhibit* both polymerization and exchange of the bound nucleotide. Circular dichroism data indicate that free *thymosin* *beta* - *4* is predominantly unstructured, containing at most six residues of alpha-helix, and that up to six additional residues may adopt an alpha-helical conformation upon binding actin. NMR data indicate that many parts of *thymosin* *beta* - *4* are not in tight contact with actin. Contacts between specific residues in actin and *thymosin* *beta* - *4* were identified by zero-length cross-linking followed by isolation and sequencing of cross-linked peptides. After carbodiimide-mediated cross-linking, Lys-3 of *thymosin* *beta* - *4* was cross-linked to Glu-167 of actin, and Lys-18 of *thymosin* *beta* - *4* was cross-linked to one of the N-terminal acidic residues of actin (Asp-1 - Glu-4); the cross-linked actin residues lie within subdomains 3 and 1, respectively. These two contacts flank the alpha-helical region of *thymosin* *beta* - *4* and place it on the barbed end; *thymosin* *beta* - *4* can thus block actin polymerization sterically. After transglutaminase-mediated cross-linking, Lys-38 of *thymosin* *beta* - *4* was cross-linked to Gln-41 of actin, placing the C-terminal region of *thymosin* *beta* - *4* in contact with subdomain 2 on the pointed end; *thymosin* *beta* - *4* may sterically block actin polymerization at the pointed end as well as the barbed end of the monomer. The distance between the pointed-end and barbed-end contacts requires that the C-terminal half of *thymosin* *beta* - *4* be in a predominantly extended conformation.
IT Miscellaneous Descriptors
ACTIN; ACTIN BINDING PROTEIN; BARBED END; BIOCHEMISTRY AND BIOPHYSICS; CARBOXY-TERMINAL REGION; CONFORMATION; POINTED END; POLYMERIZATION; THREE-DIMENSIONAL STRUCTURE; *THYMOSIN* *BETA* - *4*

L3 ANSWER 11 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Identification of contact sites in the actin- *thymosin* *beta* - *4* complex by distance-dependent thiol cross-linking.
AB. . . Cys-374, or to the sulfur atom of the ATP analog adenosine 5'-O-(thiotriphosphate) (ATP-gamma-S), the actin derivatives were reacted with synthetic *thymosin* *beta* - *4* analogs containing a cysteine at one of the positions 6, 17, 28, 34, and 40. Immediate crosslinking as followed by UV spectroscopy was found for Cys-374 of actin and Cys-6 of *thymosin* *beta* - *4* , indicating that the N terminus of *thymosin* *beta* - *4* is in close proximity ( ltoreq 9.2 ANG ) to the C terminus of actin. In contrast, only insignificant reactivity was measured for all *thymosin* *beta* - *4* analogs when the cross-linkers were anchored at Cys-10 of actin. A second contact site was identified by cross-linking of Cys-17 and Cys-28 in *thymosin* *beta* - *4* with the ATP-gamma-S derivative bound to actin, indicating that the hexamotif of *thymosin* *beta* - *4* (positions 17-22) is in close proximity ( ltoreq 9.2 ANG ) to the nucleotide. The importance of the amino acids 17 and 28 in *thymosin* *beta* - *4* for the interaction with actin was emphasized by the finding that thymosin analogs containing cysteine in these positions exhibited strongly reduced abilities to *inhibit* actin polymerization.

L3 ANSWER 12 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . sufficient to induce actin polymerization. On the other hand, addition of profilin hardly affected the polymerization induced by GTP-gamma-S, while *thymosin* *beta* - *4* or DNase I decreased this polymerization. These data suggested that GTP-gamma-S induced polymerization by increasing the availability of barbed ends. In the presence of cytochalasin B, profilin did *inhibit* polymerization induced by GTP-gamma-S, demonstrating that GTP-gamma-S did not *inhibit* profilin's monomer sequestering ability. The F-actin induced by GTP-gamma-S was not limited by a time-dependent loss of G-actin or G-proteins. . .

L3 ANSWER 13 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Increasing intracellular concentrations of *thymosin* *beta* - *4* in PtK2 cells: EFfects on stress fibers, cytokinesis, and cell spreading.
AB *Thymosin* *beta* - *4* (T-beta-4) binds to G-actin in vitro and inhibits actin polymerization. We studied the effects of increasing To, concentration within living PtK2 cells, comparing its effects on the disassembly of stress fibers and membrane-associated actin with its ability to *inhibit* cytokinesis and cell spreading after mitosis. We chose PtK2 cells for the study because these cells have many striking actin. . . within 10 min, while membrane actin appeared only somewhat reduced. If the PtK2 cells were mitotic, similar microinjection of pure *thymosin* *beta* - *4* protein at times from early prophase to metaphase resulted in an unusual pattern of delayed cytokinesis. Furrowing occurred but at. . .

L3 ANSWER 14 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Interaction of beta-thymosins, *thymosin* *beta* - *4* -sulfoxide, and N-terminally truncated *thymosin* *beta* - *4* with actin studied by equilibrium centrifugation, chemical cross-linking and viscometry.
AB All beta-thymosins studied interact with G-actin in a bimolecular complex and *inhibit* the polymerization to F-actin under high salt conditions. The interactions between actin and beta-thymosins have been studied under polymerization conditions. . . actin we employed equilibrium centrifugation of unlabeled G-actin, viscometry, and chemical cross-linking to investigate the interactions with several beta-thymosins, oxidized *thymosin* *beta* - *4* and N-terminally truncated beta-4. The apparent dissociation constants for actin from

bovine heart and beta-thymosins were 2.5, 0.1, and 2.7 mu-M for *thymosin* *beta* - *4* , (Ala1)beta-4(beta-4-Ala), and beta-1 respectively. Comparable apparent dissociation constants were obtained for the interaction of G-actin from rabbit skeletal muscle and *thymosin* *beta* - *4* or beta-4-Ala. In rabbits *thymosin* *beta* - *4* -Ala replaces beta-4 being different in amino acid residue 1 only. The apparent dissociation constant of thymosin beta-10 with actin from rabbit skeletal muscle, however, is about 10% of the value obtained with actin from bovine heart. Oxidation of *thymosin* *beta* - *4* at Met6 (beta-4-sulfoxide) as well as truncation of 6 (beta-4(7-43)) or 12 (beta-4-(13-43)) amino acid residues from the N-terminus increase. . . 13 and 24 are necessary for 1-ethyl-3(3-(dimethyl-aminopropyl)-carbodiimide cross-linking of G-actin. In spite of comparable apparent dissociation constants between actin and *thymosin* *beta* - *4* -sulfoxide or beta-4(7-43) or beta-4-(13-43), only beta-4-sulfoxide and not the truncated beta-thymosins inhibits actin polymerization, however, only at a 20-fold higher concentration than beta-4. Thus the first six amino acid residues are indispensable to *inhibit* salt-induced actin polymerization as analyzed by viscometry. While the apparent dissociation constant of the actin/ *thymosin* *beta* - *4* complex generated from a preformed actin/DNase-I complex is 160 mu-M, a fivefold excess of DNase I over the preformed actin/ *thymosin* - *beta* - *4* complex is necessary to observe a comparable dissociation constant.

L3 ANSWER 15 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Interaction of G-actin with *thymosin* *beta* - *4* and its variants thymosin beta-9 and thymosin beta-9-met.
AB *Thymosin* *beta* - *4* is a major actin sequestering peptide in vertebrate cells and plays a role in the regulation of actin monomer/polymer ratio. Thymosin beta-9 and thymosin beta-9-m-e-t are minor variants of *thymosin* *beta* - *4* . The possible function of these peptides has been investigated by comparing the actin binding properties of these beta-thymosins. Thymosin beta-9 and thymosin beta-9-met were found to *inhibit* polymerization of ATP-actin with identical K-Ds of 0.7-0.8 mu-M (as compared to 2 +- 0.3 mu-M for *thymosin* *beta* - *4* ); like *thymosin* *beta* - *4* , they bound to ADP-G-actin with a 100-fold lower affinity than to ATP-G-actin. The interaction of *thymosin* *beta* - *4* and thymosin beta-9-met with G-actin was weakened 20-fold upon oxidation of methionine-6 into methionine sulfoxide. Binding of *thymosin* *beta* - *4* to G-actin was accompanied by a 15% increase in the fluorescence intensity of actin tryptophans, and a 10 nm emission. . . blue shift. Methionine-6 played an important role in this effect. The fluorescence change was used to monitor the kinetics of *thymosin* *beta* - *4* binding to G-actin in the stopped-flow. The reaction was bimolecular, with association and dissociation rate constants of apprx 1.5 mu-M-1. . . respectively, under physiological conditions. The possible physiological significances of methionine-6 oxidation and of the relatively slow binding kinetics in regulating *thymosin* *beta* - *4* function in vivo is discussed.

L3 ANSWER 16 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* - *beta* - *4* (T-beta-4) in activated platelets.
AB. . . 5 seconds after stimulation, nucleation sites for pyrene actin polymerization increase 1.5 times in Triton-lysed supernatants. Cytochalasin D, known to *inhibit* the increase in F-actin after thrombin, also inhibits the fall in T-beta-4-actin complex and the increase in nucleation sites. Phosphorylation. . .

L3 ANSWER 17 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* *beta* - *4* synergizes with human granulocyte-macrophage colony-stimulating factor in maintaining bone marrow proliferation.
AB Recent evidence supports a role for *thymosin* *beta* - *4* (T-beta-4) in the inhibition of murine hematopoietic stem cell proliferation. This supposition results from studies in which the N-terminal tetrapeptide. . . on proliferating and unstimulated enriched human bone marrow. In short-term liquid cultures studied sequentially over 1-7 days, T-beta-4 failed to *inhibit* cell proliferation, but maintained the proliferative effect of granulocyte-macrophage colony stimulating factor (GM-CSF) on days following maximum stimulation (days 5-7).. . .

L3 ANSWER 18 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Transcript levels of *thymosin* *beta* - *4* , an actin-sequestering peptide, in cell proliferation.
AB *Thymosin* *beta* - *4* (beta-4) is an ubiquitous 5-kDa peptide that has been identified as an actin-sequestering peptide. In this work, Northern blot analysis. . . S-phase. The increase in beta-4 mRNA observed in the G2/M boundary of the cell cycle, together with its ability to *inhibit* actin polymerization, suggests a possible role of beta-4 in the morphological changes and actin redistribution occurring during the cytokinesis.

L3 ANSWER 19 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Actin-sequestering ability of *thymosin* *beta* - *4* , *thymosin* *beta* - *4* fragments, and *thymosin* *beta* - *4* -like peptides as assessed by the DNase I inhibition assay.
AB *Thymosin* *beta* - *4* containing 43 amino-acid residues belongs to a family of highly homologous peptides present at high concentrations in various species, cells, and tissues. Safer et al. (J. Biol. Chem. 266, 40-29-4032 (1991)) have shown that *thymosin* *beta* - *4* is an actin-sequestering peptide. Because DNAase I is inhibited by G-actin and not by F-actin we employed this enzymatic assay to determine the actin sequestering properties of 4 other *thymosin* *beta* - *4* -like peptides and fragments of *thymosin* *beta* - *4* generated by enzymatic digestions. *Thymosin* *beta* - *4* sequesters G-actin at a 1 to 1 ratio as thereby inhibits its polymerisation to F-actin in high salt solution. The oxidation of the single methionine residue at position 6 does not abolish its actin-sequestering properties. However neither *thymosin* *beta* - *4* -24-43 nor *thymosin* *beta* - *4* -13-43 *inhibit* the polymerization of G-actin. We conclude from this that some structural features in the amino-acid sequence of *thymosin* *beta* - *4* before position 13 are obligatory for its biological function. Oxidized *thymosin* *beta* - *4* (beta-4-sulfoxide) as well as four other *thymosin* *beta* - *4* -like peptides were shown to be actin-sequestering peptides like

*thymosin* *beta* - *4* .

L3 ANSWER 20 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI G- to F-actin modulation by a single amino acid substitution in the actin binding site of actobindin and *thymosin* *beta* - *4* .

AB The actin binding sites of actobindin and *thymosin* *beta* - *4* , two small polypeptides that *inhibit* actin polymerization by interacting with monomeric actin, have been localized using peptide mimetics. Both sites are functionally similar and extend. . .

L3 ANSWER 21 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *THYMOSIN* *BETA* - *4* FX PEPTIDE IS A POTENT REGULATOR OF ACTIN POLYMERIZATION IN LIVING CELLS.

AB *Thymosin* . *beta* . *4* (.beta.4) is a 5-kDa polypeptide originally identified in calf thymus. Although numerous activities have been attributed to .beta.4, its physiological role remains elusive. Recently, .beta.4 was found to bind actin in human platelet extracts and to *inhibit* actin polymerization in vitro, raising the possibility that it may be a physiological regulator of actin assembly. To examine this. . .

L3 ANSWER 22 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . the intial FSH injection. Twenty-eight of the heifers received Norgestomet inplants 12 h prior to the initial PGF2.alpha. injection to *inhibit* the LH surge. Blood sample were collected from animals at 12-h intervals until the PGF2.alpha. injection and every 6 h thereafter until 108 h post PGF2.alpha. treatment. Although *thymosin* . *beta* . *4* concentrations did change over the estrual period, no differences were noted between control and superovulatory animals in the initial experiment even though estradiol concentrations were increased tenfold from the FSH stimulated ovary. In the second experiment, *thymosin* . *beta* . *4* and .alpha.1 increased as the estrual period progressed and decreased ($p < 0.05$) subsequent to the LH surge. Animals not exhibiting an LH surge during the estrual period had decreased thymosin .alpha.1 concentrations. Animals receiving Norgestomet implants had decreased *thymosin* . *beta* . *4* concentrations ($p < 0.05$). Evidence supports progesterone having a regulatory effect on *thymosin* . *beta* . *4* concentration but no effect on thymosin .alpha.1. Ovulatory increases in estradiol seem to have little influence on either thymosin. Thymosin. . .

L3 ANSWER 23 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI RAPID INDUCTION OF *THYMOSIN* *BETA* - *4* IN CONCANAVALIN A-STIMULATED THYMOCYTES BY TRANSLATIONAL CONTROL.

AB The expression of *thymosin* . *beta* . *4* , an ubiquitous peptide of high cellular content, was studied in concanavalin A-stimulated rat thymocytes within the first 3 h after. . . occurred after 1 h of stimulation amounting to 0.4% of the total cellular protein. This increase coincided with that of *thymosin* . *beta* . *4* biosynthesis measured by [35S]methionine incorporation. The share of *thymosin* . *beta* . *4* synthesis in total protein synthesis 1 h after addition of concanavalin A amounts to 1% but no elevation of the. . . observed. These data suggest that a translational control mechanism is involved in this rapid induction. Consequently, actinomycin D did not *inhibit* *thymosin* . *beta* . *4* induction in contrast to cycloheximide. The peaks of maximal *thymosin* . *beta* . *4* levels and biosynthesis were followed by rapid decreases of these parameters suggesting a function of *thymosin* . *beta* . *4* in the early phase of T cell activation.

L3 ANSWER 24 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI CHEMICAL CHARACTERIZATION OF *THYMOSIN* *BETA* - *4* .

AB. . . part of ongoing investigations on the endocrine thymus, a hormone-like peptide was isolated and purified to homogeneity which was termed *thymosin* . *beta* . *4* . *Thymosin* . *beta* . *4* has MW = 4982 and an isoelectric point of 5.1. The complete amino acid sequence of this polypeptide was established by automated Edman degradation and by manual sequence analysis. *Thymosin* . *beta* . *4* is composed of 43 amino acid residues with acetylserine at the NH2 terminus. This molecule induces expression of terminal deoxynucleotidyl transferase in transferase-negative murine thymocytes in vivo and in vitro. It also exhibits ability to *inhibit* the migration of macrophages. Comparison of the sequence of *thymosin* . *beta* . *4* to other thymic hormones or other published protein sequences does not reveal any statistically significant relationship. Two helical regions were identified in the structure using data for prediction of protein conformation. *Thymosin* . *beta* . *4* is one of the biologically active peptides present in thymosin fractions 5 and 5A which participate in the regulation, differentiation. . .

=> d l2 bib ab 5

L2 ANSWER 5 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN 2004:130775 BIOSIS
DN PREV200400116257
TI Thymosin beta4 increases hair growth by activation of hair follicle stem cells.
AU philp, Deborah; Nguyen, Mychi; Scheremeta, Brooke; St.-Surin, Sharleen; Villa, Ana M.; Orgel, Adam; Kleinman, Hynda K. [Reprint Author]; Elkin, Michael
CS Cell Biology Section, NIDCR, NIH, 30 Convent Dr., Bldg. 30, Room 433, MSC 4370, Bethesda, MD, 20892, USA
hkleinman@dir.nidcr.nih.gov
SO FASEB Journal, (February 2004) Vol. 18, No. 2, pp. 385-387. print.
ISSN: 0892-6638 (ISSN print).
DT Article
LA English
ED Entered STN: 3 Mar 2004
Last Updated on STN: 3 Mar 2004

=> d l3 bib ab 5, 9, 10, 17, 19

L3 ANSWER 5 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AN 2000:104616 BIOSIS
DN PREV200000104616
TI *Thymosin* *beta* *4* sulfoxide is an

anti-inflammatory agent generated by monocytes in the presence of glucocorticoids.

AU Young, J. D.; Lawrence, A. J. [Reprint author]; MacLean, A. G.; Leung, B. P.; McInnes, I. B.; Canas, B.; Pappin, D.J.C.; Stevenson, R. D.

CS Division of Infection and Immunity, Institute of Biomedical and Life Sciences, University of Glasgow, Glasgow, G12 8QQ, UK

SO Nature Medicine, (Dec., 1999) Vol. 5, No. 12, pp. 1424-1427. print. ISSN: 1078-8956.

DT Article

LA English

ED Entered STN: 22 Mar 2000
Last Updated on STN: 3 Jan 2002

AB The possibility that glucocorticoids upregulate the expression of anti-inflammatory mediators is an exciting prospect for therapy in inflammatory diseases, because these molecules could give the therapeutic benefits of steroids without toxic side effects. Supernatants from monocytes and macrophages cultured in the presence of glucocorticoids increase the dispersion of neutrophils from a cell pellet in the capillary tube migration assay. This supernatant factor, unlike other neutrophil agonists, promotes dispersive locomotion of neutrophils at uniform concentration, lowers their adhesion to endothelial cells, inhibits their chemotactic response to fMLP and induces distinctive morphological changes. Here we show that thymosin beta4 sulfoxide is generated by monocytes in the presence of glucocorticoids and acts as a signal to *inhibit* an inflammatory response. In vitro, thymosin beta4 sulfoxide inhibited neutrophil chemotaxis, and in vivo, the oxidized peptide, but not the native form, was a potent inhibitor of carrageenin-induced edema in the mouse paw. Thymosin beta4 is unique, because oxidation attenuates its intracellular G-actin sequestering activity, but greatly enhances its extracellular signaling properties. This description of methionine oxidation conferring extracellular function on a cytosolic protein may have far-reaching implications for future strategies of anti-inflammatory therapy.

L3 ANSWER 9 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1997:411888 BIOSIS

DN PREV199799703931

TI The actin cytoskeleton is required for receptor-mediated endocytosis in mammalian cells.

AU Lamaze, Christophe; Fujimoto, L. Miya; Yin, Helen L.; Schmid, Sandra L. [Reprint author]

CS Dep. Cell Biol., Scripps Res. Inst., La Jolla, CA 92037, USA

SO Journal of Biological Chemistry, (1997) Vol. 272, No. 33, pp. 20332-20335. CODEN: JBCHA3. ISSN: 0021-9258.

DT Article

LA *English*

ED Entered STN: 24 Sep 1997
Last Updated on STN: 21 Nov 1997

AB Actin filament organization is essential for endocytosis in yeast. In contrast, the actin-depolymerizing agent cytochalasin D has yielded ambiguous results as to a role for actin in receptor-mediated endocytosis in mammalian cells. We have therefore reexamined this issue using highly specific reagents known to sequester actin monomers. Two of these *reagents*, *thymosin* *beta* - *4* and DNase I, potently inhibited the sequestration of transferrin receptors into coated pits as measured in a cell-free system using perforated A431 cells. At low concentrations, *thymosin* *beta* - *4* but not DNase I was stimulatory. Importantly, the effects of both reagents were specifically neutralized by the addition of actin monomers. A role for the actin cytoskeleton was also detected in intact cells where latrunculin A, a drug that sequesters actin monomers, inhibited receptor-mediated endocytosis. Biochemical and morphological analyses suggest that these reagents *inhibit* later events in coated vesicle budding. These results provide new evidence that the actin cytoskeleton is required for receptor-mediated endocytosis in mammalian cells.

L3 ANSWER 10 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1997:268740 BIOSIS

DN PREV199799560458

TI *Thymosin* *beta* - *4* binds actin in an extended conformation and contacts both the barbed and pointed ends.

AU Safer, Daniel [Reprint author]; Sosnick, Tobin R.; Elzinga, Marshall

CS Dep. Cell Developmental Biol., Univ. Pennsylvania, Philadelphia, PA 19104-6058, USA

SO Biochemistry, (1997) Vol. 36, No. 19, pp. 5806-5816. CODEN: BICHAW. ISSN: 0006-2960.

DT Article

LA English

ED Entered STN: 24 Jun 1997
Last Updated on STN: 24 Jun 1997

AB The beta-thymosins are a family of highly polar peptides which serve in vivo to maintain a reservoir of unpolymerized actin monomers. In vitro, beta-thymosins form 1:1 complexes with actin monomers and *inhibit* both polymerization and exchange of the bound nucleotide. Circular dichroism data indicate that free *thymosin* *beta* - *4* is predominantly unstructured, containing at most six residues of alpha-helix, and that up to six additional residues may adopt an alpha-helical conformation upon binding actin. NMR data indicate that many parts of *thymosin* *beta* - *4* are not in tight contact with actin. Contacts between specific residues in actin and *thymosin* *beta* - *4* were identified by zero-length cross-linking followed by isolation and sequencing of cross-linked peptides. After carbodiimide-mediated cross-linking, Lys-3 of *thymosin* *beta* - *4* was cross-linked to Glu-167 of actin, and Lys-18 of *thymosin* *beta* - *4* was cross-linked to one of the N-terminal acidic residues of actin (Asp-1 - Glu-4); the cross-linked actin residues lie within subdomains 3 and 1, respectively. These two contacts flank the alpha-helical region of *thymosin* *beta* - *4* and place it on the barbed end; *thymosin* *beta* - *4* can thus block actin polymerization sterically. After transglutaminase-mediated cross-linking, Lys-38 of *thymosin* *beta* - *4* was cross-linked to Gln-41 of actin, placing the C-terminal region of *thymosin* *beta* - *4* in contact with subdomain 2 on the pointed end; *thymosin* *beta* - *4* may sterically block actin polymerization at the pointed end as well as the barbed end of the monomer. The distance between the pointed-end and barbed-end contacts requires that the C-terminal half of *thymosin* *beta* - *4* be in a predominantly extended conformation.

L3 ANSWER 17 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1993:450748 BIOSIS

DN PREV199396095648

TI *Thymosin* *beta* - *4* synergizes with human

granulocyte-macrophage colony-stimulating factor in maintaining bone marrow proliferation.

AU Moscinski, Lynn C. [Reprint author]; Naylor, Paul H.; Oliver, Janelle; Goldstein, Allen L.

CS Dep. Pathol., H. Lee Moffitt Cancer Cent., P.O. Box 280179, Tampa, FL 33682, USA

SO Immunopharmacology, (1993) Vol. 26, No. 1, pp. 83-92.
CODEN: IMMUDP. ISSN: 0162-3109.

DT Article

LA English

ED Entered STN: 5 Oct 1993
Last Updated on STN: 30 Nov 1993

AB Recent evidence supports a role for *thymosin* *beta* - *4* (T-beta-4) in the inhibition of murine hematopoietic stem cell proliferation. This supposition results from studies in which the N-terminal tetrapeptide derived from native T-beta-4 was administered to mice and appeared to prevent CFU-S recruitment into DNA synthesis. The importance of this observation was the concomitant ability of the tetrapeptide to prevent cytosine arabinoside (ara-C) toxicity in mice given LD-50 doses of this drug. In the present study, we have extended these observations by demonstrating that whole synthetic T-beta-4 is more effective than the N-terminal tetrapeptide in protecting mice from the toxicity of ara-C. This observation supports the hypothesis that T-beta-4 is the biologically important parent molecule for this activity. To determine if inhibition of cell cycle progression also occurs in committed human bone marrow progenitors treated with T-beta-4, we have investigated the effects of synthetic T-beta-4 on proliferating and unstimulated enriched human bone marrow. In short-term liquid cultures studied sequentially over 1-7 days, T-beta-4 failed to *inhibit* cell proliferation, but maintained the proliferative effect of granulocyte-macrophage colony stimulating factor (GM-CSF) on days following maximum stimulation (days 5-7). No effect was noted before the fifth day in culture, no did T-beta-4 exert any demonstrable effect in the absence of added GM-CSF. Any observable effect of T-beta-4 required that it be present in the cultures on or before day 3 of GM-CSF stimulation. These results suggest that an additional effect of T-beta-4 is the stimulation of a subpopulation of committed human bone marrow precursor cells to become more sensitive to the growth-promoting activity of GM-CSF, thereby enhancing myelopoiesis. It is of interest that the N-terminal peptide of T-beta-4 is a shared sequence with tumor necrosis factor alpha, which is also known to have a similar stimulatory capacity. We, therefore, postulate that the growth enhancement noted in short-term cultures is mediated by the region containing these shared sequences.

L3 ANSWER 19 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1993:248344 BIOSIS

DN PREV199395127519

TI Actin-sequestering ability of *thymosin* *beta* - *4* , *thymosin* *beta* - *4* fragments, and *thymosin* *beta* - *4* -like peptides as assessed by the DNase I inhibition assay.

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SO Biological Chemistry Hoppe-Seyler, (1993) Vol. 374, No. 2, pp. 117-122.
CODEN: BCHSEI. ISSN: 0177-3593.

DT Article

LA English

ED Entered STN: 21 May 1993
Last Updated on STN: 13 Jul 1993

AB *Thymosin* *beta* - *4* containing 43 amino-acid residues belongs to a family of highly homologous peptides present at high concentrations in various species, cells, and tissues. Safer et al. (J. Biol. Chem. 266, 40-29-4032 (1991)) have shown that *thymosin* *beta* - *4* is an actin-sequestering peptide. Because DNAase I is inhibited by G-actin and not by F-actin we employed this enzymatic assay to determine the actin sequestering properties of 4 other *thymosin* *beta* - *4* -like peptides and fragments of *thymosin* *beta* - *4* generated by enzymatic digestions. *Thymosin* *beta* - *4* sequesters G-actin at a 1 to 1 ratio as thereby inhibits its polymerisation to F-actin in high salt solution. The oxidation of the single methionine residue at position 6 does not abolish its actin-sequestering properties. However neither *thymosin* *beta* - *4* -24-43 nor *thymosin* *beta* - *4* -13-43 *inhibit* the polymerization of G-actin. We conclude from this that some structural features in the amino-acid sequence of *thymosin* *beta* - *4* before position 13 are obligatory for its biological function. Oxidized *thymosin* *beta* - *4* (beta-4-sulfoxide) as well as four other *thymosin* *beta* - *4* -like peptides were shown to be actin-sequestering peptides like *thymosin* *beta* - *4* .

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SEA THYMOSIN (W) BETA

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